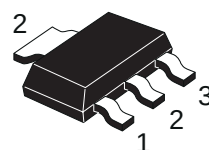


MEDIUM POWER AMPLIFIER

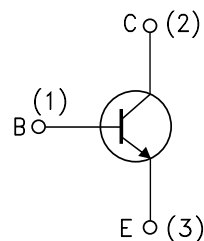
ADVANCE DATA

- SILICON EPITAXIAL PLANAR NPN TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- GENERAL PURPOSE MAINLY INTENDED FOR USE IN MEDIUM POWER INDUSTRIAL APPLICATION AND FOR AUDIO AMPLIFIER OUTPUT STAGE
- PNP COMPLEMENTS ARE BSP30, BSP31, BSP32 AND BSP33 RESPECTIVELY



SOT-223

INTERNAL SCHEMATIC DIAGRAM



SC06960

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BSP40/BSP41	BSP42/BSP43	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	70	90	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	60	80	V
V_{CES}	Collector-Emitter Voltage ($V_{BE} = 0$)	70	90	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	5		V
I_C	Collector Current	1		A
I_B	Base Current	0.1		A
P_{tot}	Total Dissipation at $T_c = 25^\circ\text{C}$	2		W
T_{stg}	Storage Temperature	-65 to 150		$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	150		$^\circ\text{C}$

THERMAL DATA

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	62.5	$^{\circ}\text{C/W}$
$R_{thj-tab}$ •	Thermal Resistance Junction-Collector Tab	Max	8	$^{\circ}\text{C/W}$

• Mounted on a ceramic substrate area = 30 x 35 x 0.7 mm

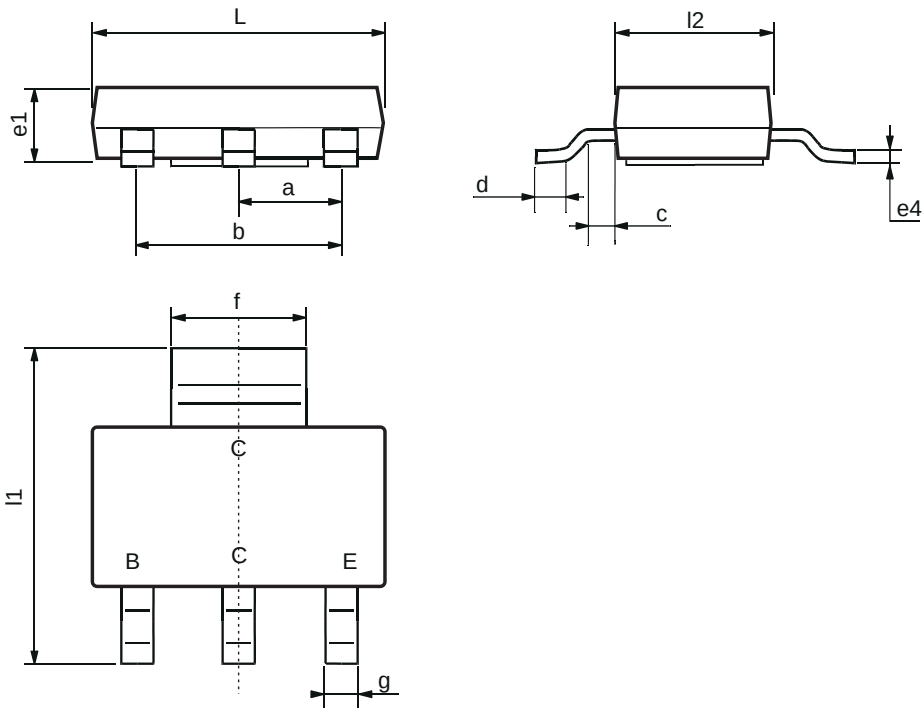
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 60\text{ V}$ $V_{CB} = 60\text{ V}$ $T_j = 150^{\circ}\text{C}$			100 50	nA μA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 100\text{ }\mu\text{A}$ for BSP40/BSP41 for BSP42/BSP43	70 90			V V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 10\text{ mA}$ for BSP40/BSP41 for BSP42/BSP43	60 80			V V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage ($V_{BE} = 0$)	$I_C = 10\text{ }\mu\text{A}$ for BSP40/BSP41 for BSP42/BSP43	70 90			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_C = 10\text{ }\mu\text{A}$	5			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 150\text{ mA}$ $I_B = 15\text{ mA}$ $I_C = 500\text{ mA}$ $I_B = 50\text{ mA}$			0.25 0.5	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 150\text{ mA}$ $I_B = 15\text{ mA}$ $I_C = 500\text{ mA}$ $I_B = 50\text{ mA}$			1 1.2	V V
h_{FE}^*	DC Current Gain	for BSP40/BSP41 $I_C = 100\text{ }\mu\text{A}$ $V_{CE} = 5\text{ V}$ $I_C = 100\text{ mA}$ $V_{CE} = 5\text{ V}$ $I_C = 500\text{ mA}$ $V_{CE} = 5\text{ V}$ for BSP42/BSP43 $I_C = 100\text{ }\mu\text{A}$ $V_{CE} = 5\text{ V}$ $I_C = 100\text{ mA}$ $V_{CE} = 5\text{ V}$ $I_C = 500\text{ mA}$ $V_{CE} = 5\text{ V}$	10 40 30 30 100 50		120 300	
f_T	Transition Frequency	$I_C = 50\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 35\text{ MHz}$	100			MHz
C_{CBO}	Collector-Base Capacitance	$I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$			20	pF
C_{EBO}	Emitter-Base Capacitance	$I_C = 0$ $V_{EB} = 0.5\text{ V}$ $f = 1\text{ MHz}$			90	pF
t_{on}	Turn-on Time	$I_C = 100\text{ mA}$ $I_{B1} = -I_{B2} = 5\text{ mA}$			250	ns
t_{off}	Turn-on Time				1000	ns

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 1.5\%$

SOT223 MECHANICAL DATA

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a	2.27	2.3	2.33	89.4	90.6	91.7
b	4.57	4.6	4.63	179.9	181.1	182.3
c	0.2	0.4	0.6	7.9	15.7	23.6
d	0.63	0.65	0.67	24.8	25.6	26.4
e1	1.5	1.6	1.7	59.1	63	66.9
e4			0.32			12.6
f	2.9	3	3.1	114.2	118.1	122.1
g	0.67	0.7	0.73	26.4	27.6	28.7
l1	6.7	7	7.3	263.8	275.6	287.4
l2	3.5	3.5	3.7	137.8	137.8	145.7
L	6.3	6.5	6.7	248	255.9	263.8



P008B

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